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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/613,366	07/03/2003	Fuliang Weng	11403/46	4879
26646	7590	08/25/2006	EXAMINER	
KENYON & KENYON LLP ONE BROADWAY NEW YORK, NY 10004			THANGAVELU, KANDASAMY	
			ART UNIT	PAPER NUMBER
			2123	

DATE MAILED: 08/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/613,366	Applicant(s) WENG ET AL.	
	Examiner Kandasamy Thangavelu	Art Unit 2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>March 31, 2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-184 of the application have been examined.

Information Disclosure Statement

2. Acknowledgment is made of the information disclosure statements filed on March 31, 2004 together with copies of papers. The papers have been considered.

Drawings

3. The drawings submitted on July 3, 2003 are accepted.

Abstract

4. The abstract is objected to because of the following informalities:

Line 8, "and the model is adjusted using the selected using the top-ranked feature" appears to be incorrect and it appears that it should be "and the model is adjusted using the selected top-ranked feature".

Appropriate correction is required.

Specification

5. The disclosure is objected to because of the following informalities:

Page 1, Line 21, "when parameter estimate algorithms are sufficiently fast" appears to be incorrect and it appears that it should be "when parameter estimating algorithms are sufficiently fast".

Page 1, Lines 23-24, "to reduce require memory requirements during runtime" appears to be incorrect and it appears that it should be "to reduce memory requirements during runtime".

Page 3, Lines 26-27, "only computes the approximate gains for the top-ranked features based on models" appears to be incorrect and it appears that it should be "only computes the approximate gains for the top-ranked feature based on models". There can be only one top-ranked feature. How do you determine more than one feature are top-ranked? What is the criterion used?

Page 4, Line 13, "only determines the approximate gains for the top-ranked features based on the models" appears to be incorrect and it appears that it should be "only determines the approximate gains for the top-ranked feature based on the models". There can be only one top-ranked feature. How do you determine more than one feature are top-ranked? What is the criterion used?

Page 4, Lines 23-24, "and a model is adjusted using the selected using the top-ranked feature" appears to be incorrect and it appears that it should be "and a model is adjusted using the selected top-ranked feature".

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Page 5, Lines 26-27, "steps are repeated until a quantity of selected features exceeds a predefined value" appears to be incorrect and it appears that it should be "steps are repeated until the number of selected features exceeds a predefined value".

Page 6, Lines 23-24, "to determine gains for top-ranked features in ascending order from a highest to a lowest" appears to be incorrect and it appears that it should be "to determine gains for top-ranked features in descending order from a highest to a lowest".

Appropriate corrections are required.

Claim Objections

6. The following is a quotation of 37 C.F.R § 1.75 (d)(1):

The claim or claims must conform to the invention as set forth in the remainder of the specification and terms and phrases in the claims must find clear support or antecedent basis in the description so that the meaning of the terms in the claims may be ascertainable by reference to the description.

7. Claims 1, 8, 14 and 18 are objected to because of the following informalities:

Claim 1, Line 6, "adjusting a model using the selected using the top-ranked feature" appears to be incorrect and it appears that it should be "adjusting a model using the selected top-ranked feature".

Claim 8, Line 14, "repeating steps (f) through (g);" appears to be incorrect and it appears that it should be "repeating steps (f) through (h)". How does this repeat loop end?

Claim 8, Lines 15-16, "repeating steps (c) through (h) until one of a quantity of selected features exceeds a predefined value" appears to be incorrect and it appears that it should be "repeating steps (c) through (h) until the number of selected features exceeds a predefined value".

Claim 14, Lines 1-2, "the gain computation arrangement and is configured" appears to be incorrect and it appears that it should be "the gain computation arrangement is configured".

Claim 18, Line 3, "ordering candidate features based on gains computed on a uniform distribution" appears to be incorrect and it appears that it should be "ordering candidate features based on gains computed using a uniform distribution".

Claim 18, Lines 20-21, "terminating the method if one of a quantity of selected features reaches a pre-defined value" appears to be incorrect and it appears that it should be "terminating the method if the number of selected features reaches a pre-defined value".

Appropriate corrections are required.

Claim Rejections - 35 USC § 112

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8. The following is a quotation of the first paragraph of 35 U.S.C. §112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

9. Claims 1-18 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

9.1 Claim 1, Lines 2-3 state “determining gains for candidate features during an initialization stage and for only top-ranked features during each feature selection stage”. There can be only one top-ranked feature. How do you determine more than one feature are top-ranked? What is the criterion used?

9.2 Claim 2, Lines 1-3 state “the gains of the candidate features determined in a previous feature selection stage are reused as upper bound gains of remaining candidate features in a current feature selection stage”. What are remaining candidate features? How do you select remaining candidate features? Does this mean that you are removing from the ordered list one or more features? When do you remove them?

9.3 Claim 5, Lines 1-2 state “gains for a predefined number of top-ranked features are determined at each feature selection stage”. There can be only one top-ranked feature. How do

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you determine more than one feature are top-ranked? How do you determine a predefined number of top-ranked features? What is the criterion used?

9.4 Claim 6, Lines 2-3 state “re-evaluating gains of all remaining candidate features at a predefined feature selection stage”. What are all remaining candidate features? How do you select all remaining candidate features? Does this mean that you are removing from the ordered list one or more features? When do you remove them?

9.5 Claim 8, Line 14 states “repeating steps (f) through (g)”. How does this loop end? Should step (h) be included in this loop?

9.6 Claim 8, Lines 15-16 state “repeating steps (c) through (h) until one of a quantity of selected features exceeds a predefined value”. What is “one of a quantity of selected features”?

9.7 Claim 9, Lines 1-2 state “computing the gain of the top-ranked feature includes computing the gain of a predefined number of top-ranked features”. There can be only one top-ranked feature. How do you determine more than one feature are top-ranked? How do you determine a predefined number of top-ranked features? What is the criterion used?

9.8 Claim 11, Lines 1-3 state “gains of a majority of the candidate features remaining at each feature selection stage are reused based on a model adjusted in a previous feature selection stage”. How do you select a majority of the candidate features remaining?

9.9 Claim 12, Lines 5-6 state “to determine gains for only top-ranked features.during a feature selection stage”. There can be only one top-ranked feature. How do you determine more than one feature are top-ranked? What is the criterion used?

9.10 Claim 13, Lines 1-2 state “feature ranking arrangement is configured to re-use gains of remaining candidate features determined”. What are remaining candidate features? How do you select remaining candidate features? Does this mean that you are removing from the ordered list one or more features? When do you remove them?

9.11 Claim 14, Lines 2-3 state “to determine gains for top-ranked features in ascending order from a highest to lowest until a top-ranked feature is encountered”. There can be only one top-ranked feature. How do you determine more than one feature are top-ranked? What is the criterion used? When you go from the highest to lowest, it is descending order and not ascending order.

9.12 Claim 15, Lines 2-3 state “to determine gains for a predefined number of top-ranked features”. There can be only one top-ranked feature. How do you determine more than one feature are top-ranked? How do you determine a predefined number of top-ranked features? What is the criterion used?

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9.13 Claim 16, Lines 1-2 state “the predefined number of top-ranked features”. There can be only one top-ranked feature. How do you determine more than one feature are top-ranked? . How do you determine the predefined number of top-ranked features? What is the criterion used?

9.14 Claim 17, Lines 1-2 state “gains of all candidate features remaining”. What are candidate features remaining? How do you select candidate features remaining? Does this mean that you are removing from the ordered list one or more features? When do you remove them?

9.15 Claim 18, Lines 17-18 state “comparing the gains of the top-ranked and next-ranked features”. There can be only one next-ranked feature. How do you determine more than one feature are next-ranked? What is the criterion used?

9.16 Claim 18, Lines 20-21 state “terminating the method if one of a quantity of selected features reaches a pre-defined value and a gain of a last feature reaches a pre-defined value”. What is “one of a quantity of selected features”?

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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11. Claim 1-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

11.1 Claim 17 recites the limitation " The processing arrangement of claim 11" in Line 1 of the claim. There is insufficient antecedent basis for this limitation in the claim. Claim 11 refers to "The method of claim 7" and not the processing arrangement.

11.2 Claim 1 states in part, "determining gains for candidate features during an initialization stage and for only top-ranked features during each feature selection stage". There can be only one top-ranked feature. Therefore, "top-ranked features" is undefined, vague and indefinite.

Claim 1 states in part, "adjusting a model using the selected using the top-ranked feature". This assumes that there is an initial model which is later adjusted. How is the initial model obtained? It is vague and indefinite. In "using the selected", the selected is undefined, vague and indefinite. What is "the selected"?

11.3 Claim 2 states in part, "are reused as upper bound gains of remaining candidate features in a current feature selection stage". The "remaining candidate features" are undefined, vague and indefinite. How are the "remaining candidate features" determined?

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11.4 Claim 5 states in part, “gains for a predefined number of top-ranked features are determined at each feature selection stage”. There can be only one top-ranked feature. Therefore, “top-ranked features” and “a predefined number of top-ranked features “ are undefined, vague and indefinite.

11.5 Claim 6 states in part, “re-evaluating gains of all remaining candidate features”. The “remaining candidate features” are undefined, vague and indefinite. How are the “remaining candidate features” determined?

11.6 Claim 8 states in part, “repeating steps (c) through (h) until one of a quantity of selected features exceeds a predefined value”. The “one of a quantity of selected features” is undefined, vague and indefinite. How is the “one of a quantity of selected features” determined?

11.7 Claim 9 states in part, “computing the gain of a predefined number of top-ranked features”. There can be only one top-ranked feature. Therefore, “top-ranked features” and “a predefined number of top-ranked features “ are undefined, vague and indefinite.

11.8 Claim 11 states in part, “gains of a majority of the candidate features remaining at each feature selection stage”. The “a majority of the candidate features remaining” is undefined, vague and indefinite. How is the “a majority of the candidate features remaining” determined?

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11.9 Claim 12 states in part, “to determine gains for only top-ranked features during a feature selection stage”. There can be only one top-ranked feature. Therefore, “top-ranked features” are undefined, vague and indefinite.

11.10 Claim 13 states in part, “re-use gains of remaining candidate features determined”. The “remaining candidate features” are undefined, vague and indefinite. How are the “remaining candidate features” determined?

11.11 Claim 14 states in part, “to determine gains for top-ranked features in ascending order from a highest to lowest ... greater than gains of the remaining candidate features”. There can be only one top-ranked feature. Therefore, “top-ranked features” are undefined, vague and indefinite. When you go from the highest to the lowest, it is descending order and not ascending order. The “remaining candidate features” are undefined, vague and indefinite. How are the “remaining candidate features” determined?

11.12 Claim 15 states in part, “for a predefined number of top-ranked features”. There can be only one top-ranked feature. Therefore, “top-ranked features” are undefined, vague and indefinite.

11.13 Claim 16 states in part, “the predefined number of top-ranked features”. There can be only one top-ranked feature. Therefore, “top-ranked features” and “the predefined number of top-ranked features” are undefined, vague and indefinite.

11.14 Claim 17 states in part, “gains of all candidate features remaining”. The “candidate features remaining” are undefined, vague and indefinite. How are the “candidate features remaining” determined?

11.15 Claim 18 states in part, “comparing the gains of the top-ranked and next-ranked features”. There can be only one next-ranked feature. Therefore, “next-ranked features” are undefined, vague and indefinite.

Claim 18 states in part, “terminating the method if one of a quantity of selected features reaches a pre-defined value and a gain of a last feature reaches a pre-defined value”. The “one of a quantity of selected features” is undefined, vague and indefinite. How is the “one of a quantity of selected features” determined?

Claim Rejections - 35 USC § 102

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claims 1, 4-8, 10, 12, 14, 15, 17 and 18 are rejected under 35 U.S.C. § 102(b) as being anticipated by **Berger et al.** (U.S. Patent 6,304,841).

13.1 **Berger et al.** teaches Automatic construction of conditional exponential models from elementary features. Specifically, as per claim 1, **Berger et al.** teaches a method to select features for maximum entropy modeling (Fig. 15; Fig. 16; CL3, L37-43; CL16, L26-33; CL18, L59-62; CL19, L15-23; CL19, L37-39), the method comprising:

determining gains for candidate features during an initialization stage and for only top-ranked features during each feature selection stage (CL3, L52-54; CL17, L50-52; CL23, L31-32);

ranking the candidate features in an ordered list based on the determined gains (CL3, L54-55; CL23, L37);

selecting a top-ranked feature in the ordered list with a highest gain (CL3, L54-55; CL22, L17-20; CL23, L37); and

adjusting a model using the selected using the top-ranked feature (CL3, L56-58; CL3, L46-47; CL22, L58-62).

Per claim 4: **Berger et al.** teaches that the top-ranked feature is selected when a gain of the top-ranked feature determined using a currently adjusted model is greater than the gains of remaining candidate features determined using a previously adjusted model (CL23, L37).

Per claim 5: **Berger et al.** teaches that gains for a predefined number of top-ranked features are determined at each feature selection stage (CL23, L28-32).

Per claim 6: **Berger et al.** teaches re-evaluating gains of all remaining candidate features at a pre-defined feature selection stage (CL23, L29-40).

Per claim 7: **Berger et al.** teaches that only the un-normalized conditional probabilities that satisfy a set of selected features are modified (CL16, L51-62; CL18, L18-28).

13.2 As per claim 8, **Berger et al.** teaches a method to select features for maximum entropy modeling (Fig. 15; Fig. 16; CL3, L37-43; CL16, L26-33; CL18, L59-62; CL19, L15-23; CL19, L37-39), the method comprising:

- (a) computing gains of candidate features using a uniform distribution (CL15, L49-51; CL15, L63-67; CL16, L26-33; CL18, L59-62; CL19, L9-12);
- (b) ordering the candidate features in an ordered list based on the computed gains (CL3, L54-55; CL23, L37);
- (c) selecting a top-ranked feature with a highest gain in the ordered list (CL3, L54-55; CL22, L17-20; CL23, L37); and
- (d) adjusting a model using the selected top-ranked feature (CL3, L56-58; CL3, L46-47; CL22, L58-62).
- (e) removing the top-ranked feature from the ordered list so that a next-ranked feature in the ordered list becomes the top-ranked feature (CL23, L38: inherent);
- (f) computing a gain of the top-ranked feature using the adjusted model;
- (g) comparing the gain of the top-ranked feature with a gain of the next-ranked feature in the ordered list;

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(h) if the gain of the top-ranked feature is less than the gain of the next-ranked feature, repositioning the top-ranked feature in the ordered list so that the next-ranked feature becomes the top-ranked feature and an order of the ordered list is maintained (CL3, L52-58; CL23, L28-40); and

(i) repeating steps (c) through (h) until one of a quantity of selected features exceeds a predefined value and a gain of a last-selected feature falls below a predefined value (CL23, L29-40; CL23, L41-47).

Per claim 10: **Berger et al.** teaches that the gains of all remaining features at a predefined feature selection are re-evaluated (CL23, L28-40).

13.3 As per claim 12, **Berger et al.** teaches a processing arrangement system to perform maximum entropy modeling in which one or more candidate features derived from a corpus of data are incorporated into a model that predicts linguistic behavior (Fig. 15; Fig. 16; CL1, L16-18; CL3, L37-43; CL16, L26-33; CL18, L59-62; CL19, L15-23; CL19, L37-39), the system comprising:

a gain computation arrangement to determine gains for the candidate features during an initialization stage and to determine gains for only top-ranked features during a feature selection stage (CL3, L52-54; CL17, L50-52; CL23, L31-32);

a feature ranking arrangement to rank features based on the determined gain (CL3, L54-55; CL23, L37);

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a feature selection arrangement to select a feature with a highest gain (CL3, L54-55; CL22, L17-20; CL23, L37); and

a model adjustment arrangement to adjust the model using the selected feature (CL3, L56-58; CL3, L46-47; CL22, L58-62).

Per claim 14: **Berger et al.** teaches that the gain computation arrangement and is configured to determine gains for top-ranked features in ascending order from a highest to lowest until a top-ranked feature is encountered whose corresponding gain based on a current model is greater than gains of the remaining candidate features (CL23, L28-40).

Per claim 15: **Berger et al.** teaches that the gain computation arrangement is configured to determine gains for a predefined number of top-ranked features at each feature selection stage (CL23, L28-32).

Per claim 17: **Berger et al.** teaches that gains of all candidate features remaining at a predefined feature selection stage are re-evaluated (CL23, L29-40).

13.4 As per claim 18, **Berger et al.** teaches a storage medium having a set of instructions executable by a processor (Fig. 11; Fig. 15; Fig. 16; CL1, L16-18; CL3, L37-43; CL4, L57-63; CL16, L26-33; CL18, L59-62; CL19, L15-23; CL19, L37-39), the system comprising:

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ordering candidate features based on gains computed on a uniform distribution to form an ordered list of candidate features (CL3, L54-55; CL23, L37; CL15, L49-51; CL15, L63-67; CL16, L26-33; CL18, L59-62; CL19, L9-12);

selecting a top-ranked feature with a largest gain to form a model for a next stage (CL3, L54-58; CL3, L46-47; CL22, L17-20; CL22, L58-62; CL23, L37);

removing the top-ranked feature from the ordered list of the candidate features (CL23, L38: inherent);

computing a gain of the top-ranked feature based on a model formed in a previous stage;

comparing the gain of the top-ranked feature with gains of remaining candidate features in the ordered list;

including the top-ranked feature in the model if the gain of the top-ranked feature is greater than the gain of a next-ranked feature in the ordered list;

inserting the top-ranked feature in the ordered list so that the next-ranked feature becomes the top-ranked feature and an order of the ordered list is maintained, if the gain of the top-ranked feature is less than any of the gains of the next-ranked feature in the ordered list;

repeating the steps of computing the gain of the top-ranked feature, comparing the gains of the top-ranked and next-ranked features until the gain of the top-ranked feature exceeds the gains of ordered candidate features (CL3, L52-58; CL23, L28-40); and

terminating the method if one of a quantity of selected features reaches a pre-defined value and a gain of a last feature reaches a pre-defined value (CL23, L29-40; CL23, L41-47).


Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kandasamy Thangavelu whose telephone number is 571-272-3717. The examiner can normally be reached on Monday through Friday from 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez, can be reached on 571-272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to TC 2100 Group receptionist: 571-272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


K. Thangavelu
Art Unit 2123
August 17, 2006